The Relationship Between Spirituality, Health and Life Satisfaction of Undergraduate Students in the UK: An Online Questionnaire Study

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ORIGINAL PAPER

The Relationship Between Spirituality, Health and Life Satisfaction of Undergraduate Students in the UK: An Online Questionnaire Study

Varun Anand · June Jones · Paramjit S. Gill

Abstract US students with higher spirituality scores report better health and life satisfaction. This is the first UK study to explore the relationship between spirituality, health and life satisfaction of undergraduate students. Over 500 undergraduates completed an online questionnaire. Significant differences in spirituality score were present across college, ethnicity and religious belief. There appears to be a desire for spirituality amongst many students. Universities have a role to play in supporting students' search for meaning and purpose. Additional research is warranted to further understand the role of spirituality in the health and well-being of undergraduates.

Keywords Spirituality · Health · Life satisfaction · Well-being · Students

Introduction

Young adults are exploring spirituality (Cavendish et al. 2001) and actively pursuing a reason for existence; 'there is a desire for belonging and to find purpose in life' (Webber 2001). However, discussions about spirituality remain somewhat taboo in British society (Hay and Hunt 2000). Recently, there has been an accumulating body of scientific evidence linking religious involvement with improved health outcomes (Koenig et al. 2001). Although spirituality overlaps with religion, it is a multidimensional concept with no

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consistent definition in the literature (Miller and Thoresen 2003). A recent attempt to conceptualise spirituality proposed four components, any of which may stand alone: '*Belief* in a domain that goes beyond the material world; *Practice* by way of contemplation, prayer, reading or reflection; *Awareness* of being moved intellectually and/or emotionally; and *Experience* that is usually unbidden' (King 2009).

The importance of spirituality in patients' end of life care has been recently highlighted (Grant et al. 2010). Spiritual quality of life has also recently been shown to make a significant contribution to assessing quality of life in health (O'Connell and Skevington 2010). Research on spirituality's positive connection to physical and mental health is beginning to emerge (Larson et al. 1998; Lawler-Row and Elliott 2009; Seybold and Hill 2001). As an increasingly recognised determinant of health (Fleming and Evans 2008), spirituality is a common coping strategy for patients (NICE Guidance 2004). A literature review has revealed that the spiritual needs of patients affect health outcomes. Furthermore, there is a strong positive relationship between overall patient satisfaction and the extent to which staff address patients' emotional and spiritual needs (Clark et al. 2003).

However, most of the studies have focused on adults, with little research amongst students. University is often the place where students discover their purpose in life (Taylor 2008), suggesting that research into their spirituality could be worthwhile. In the USA, 80 % of students entering college have an interest in spirituality (Astin et al. 2011). Aspects of the ASPIRES scale, which measures religious sentiments and spiritual transcendence, have been shown to have causal influences on Axis II characteristics in two US college student samples (Piedmont et al. 2007). A study in 2000 demonstrated that personal spirituality amongst undergraduates had a positive impact on the satisfaction with life component of subjective well-being. As participants were sampled from a private religiously affiliated college, the study is subject to selection bias (Fabricatore et al. 2000). College students in the USA with higher mean spirituality scores reported better overall physical health and higher levels of life satisfaction, although this was only assessed using a single question. Conversely, low self-reported spirituality predicted risky health behaviours, including tobacco and alcohol consumption (Nelms 2005). Furthermore, a study involving 522 college students showed that those who described themselves as spiritual or religious were likely to report better self-perceived health, which in turn influenced life satisfaction. However, White participants made up over 90 % of the sample, thereby limiting the study's generalisability (Zullig et al. 2006).

Much of the research on spirituality and health has come from a US Judeo-Christian perspective. There is a gap in the literature when it comes to studies of participants of different beliefs, with very limited data from the UK. This study explored the relationship between spirituality and the health and life satisfaction of undergraduate students in the UK. Secondary aims examined whether the relationships varied by age, gender, marital status, ethnicity, year of study, college, religious belief, being a member of a religious/spiritual society or extracurricular group and/or smoking and alcohol consumption. As the University of Birmingham has a rich tradition of culturally diverse students, it provided the perfect platform to explore these relationships in a multifaith setting. Understanding the role spirituality has in student life would inform managers of higher education of the potential social and health benefits of incorporating spirituality in a university setting.

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Methods

Design and Participants

The study was a cross-sectional online survey conducted between January and April 2010 at the University of Birmingham. Students across all years studying on full-time undergraduate courses were eligible. Owing to data protection issues, permission was not granted to randomly select students from the University register. Therefore, for each of the five University colleges, a subject course was randomly selected. To ensure that all colleges were similarly represented, if the selected course had 150 students or less, an additional course was randomly selected from that college. Courses with less than 100 students were excluded for logistical reasons. The randomly selected courses were as follows: Ancient History and Music from the College of Arts and Law, Accounting and Finance and International Business from the College of Social Sciences, Dentistry from the College of Medical and Dental Sciences, Psychology from the College of Life and Environmental Sciences and Chemical Engineering and Electronic Engineering from the College of Engineering and Physical Sciences. This stratified random sampling method ensured that students represented a wide variety of academic disciplines.

Procedure

The survey was initially piloted, following which any sources of ambiguity were corrected. After permission was obtained from the respective programme leads, a total of 2,361 undergraduates received a cover email containing a link to a short online survey. A reminder email was sent after 2 weeks. Students had an equal time of 2 months to complete the survey after which further entries were excluded. Spirituality was defined using the National Institute for Health and Clinical Excellence (NICE) definition of spiritual belief, 'the search for the existential or ultimate meaning in life' that 'may not always be expressed in a religious way' (NICE Guidance 2004). The two outcome measures were general health and life satisfaction. Life satisfaction was defined as 'our subjective evaluation of the degree to which our most important needs, goals and wishes have been fulfilled' (Frisch 2006). The BMedSc Population Sciences and Humanities Internal Ethics Review Committee approved the study.

Measures

The survey took approximately 5 min to complete and consisted of four sections. 'Introduction' section asked basic demographic details and lifestyle behaviours including religious/spiritual group membership, participation in an extracurricular group activity and smoking and alcohol consumption. In 'Methods' section, participants indicated the extent of their agreement or disagreement with 13 statements on the Spirituality Scale. This short scale was used to encourage response from students on a potentially uncomfortable subject. The Spirituality Scale has been used previously amongst a sample of students ($n = 221$) where it demonstrated a high internal consistency reliability estimate ($\alpha = .96$). Convergent validity was demonstrated by the high inter-item correlations ($r = .32$–$.81$, $p < .01$). Discriminant validity was also examined for and proven, supporting the overall construct validity of the scale (Nelms 2005). The order of the questions was altered slightly to ensure a clear flow and improve readability.

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'Results' section assessed students' general health in three ways. The first question rated their general health from 'very good' to 'very bad' and was based on the proposed question for the 2011 census (Office for National Statistics 2009). Participants were then asked how many days over the past month their health was not good. This question was taken from the Centres for Disease Control and Prevention's Health-Related Quality of Life Scale, demonstrating good construct validity in a random sample of students (Zullig 2005). A shortened version of the Cohen–Hoberman Inventory of Physical Symptoms (CHIPS) asked about the occurrence of nine symptoms on a 4-point Likert scale (Lawler-Row and Elliott 2009). The CHIPS had good internal reliability in two separate college student samples ($\alpha = .88$; Cohen and Hoberman 1983). Students were then asked if they had a chronic medical condition that could explain any of these symptoms. The last section of the survey was the Brief Multidimensional Students' Life Satisfaction Scale—College version. Eight dimensions of life satisfaction were assessed on a 7-point Delighted-Terrible scale, for example, 'I would describe my satisfaction with my family life as…' This scale recently demonstrated acceptable internal consistency ($\alpha = .80$) and construct validity amongst 723 students (Zullig et al. 2009).

Active measures were taken to improve response in a typically recalcitrant population (Sax et al. 2003). These included a prize draw, A3 posters, messages on the University's Web portal, an article in the University's newspaper and messages on the social networking website Facebook.

Statistical Analysis

Data were analysed using SPSS Statistics 18.0. First, a descriptive analysis of demographics was undertaken. The spirituality responses were coded from 1 for 'strongly disagree' to 5 for 'strongly agree'. 'Agree' and 'strongly agree' were combined as were 'disagree' and 'strongly disagree' to enable the proportions in these groups to be compared using binomial tests. The coded responses were summed into a score out of 65, a higher score reflecting a higher degree of spirituality. The same was done for the symptoms scale giving a score out of 36 (higher score meaning better health) and for life satisfaction giving a score out of 56 (higher score meaning greater life satisfaction).

If distributions were skewed, they were summarised using median and interquartile range (IQR), otherwise means and standard deviations were given. Correlation analyses were undertaken between these three total scores. The normality of the total spirituality, health and life satisfaction score residuals was assessed. Mean total spirituality scores were compared across the demographic variables using independent t tests and analysis of variance (ANOVA). Analysis of covariance (ANCOVA) was undertaken to see if any differences were still present after controlling for total health score and life satisfaction score. Multivariate regression analyses were conducted with total spirituality score as the independent variable and total health and life satisfaction score as dependent variables. A minimum sample size of 204 participants was required for the multiple regression analyses to demonstrate a medium effect size ($f^2 = .15$) of spirituality on the health and life satisfaction of students with 12 predictors (power = .90, $\alpha = .01$).

Results

The response rate achieved was 23 % (539 out of 2,361), giving the study sufficient power for the primary research question. From the initial sample of 539, 13 students were

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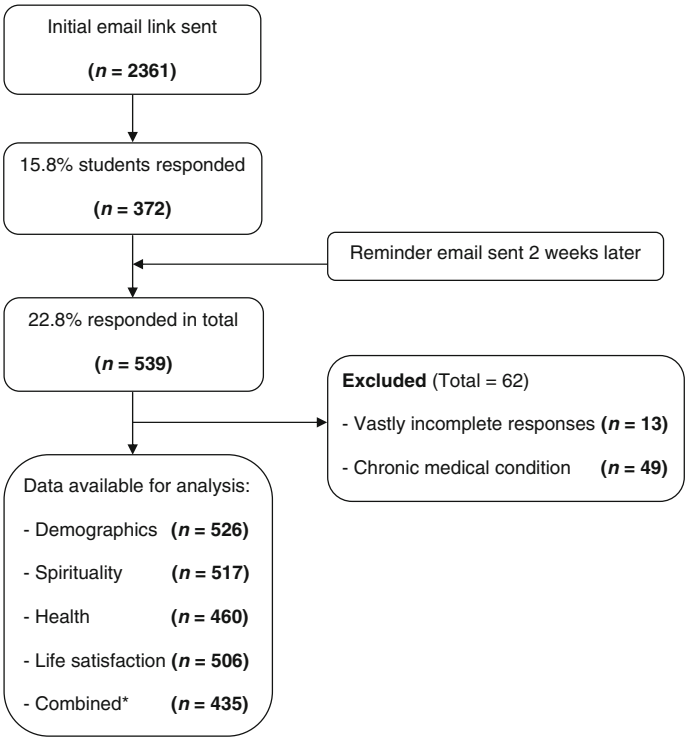

Fig. 1 Response flow chart. *Asterisk* demographic, spirituality, health and life satisfaction responses combined

excluded because they only completed 'Introduction' section of the survey. Numbers completing each section vary slightly as not all participants completed all sections. Analysis between sections was conducted with the maximum number of students who had completed both sections. Forty-nine participants were excluded from primary analyses because they had a chronic medical condition. Where only one item on any scale was missing, the mean value was substituted. Analysis was conducted on the complete data set and after mean value substitution. If more than one item was missing, the participant was excluded. A response flow chart is shown in Fig. 1.

Almost 95 % of respondents were aged between 18 and 22 (range 17–62 years). Mean age of respondents was similar to that of non-respondents, 20.2 years (SD = 2.5) and 20.0 years, respectively. Female and White students were overrepresented amongst the respondents. Arts and Law students had the highest response, and although response from the other colleges appears similar, only 6 % of Accounting and Finance students responded. Further data on characteristics of respondents and non-respondents are presented in Table 1.

Table 2 shows the responses from the Spirituality Scale. Binomial tests were performed, and the asterisked items are those where the proportion that agreed or strongly agreed significantly differed from the proportion that disagreed or strongly disagreed. Clearly,

Table 1 Baseline characteristics of respondents and non-respondents

College	Arts and Law	Social Sciences	Medical and Dental Sciences	Life and Environmental Sciences	Engineering and Physical Sciences	Total
Respondents						
n	152 (53.9)	62 (16.2)	77 (16.9))	107 (21.0)	123 (16.8)	526 (22.3)
Mean age (SD)	20.0 (3.6)	20.1 (1.5)	21.1 (1.9)	19.6 (1.2)	20.6 (2.1)	20.3 (2.1)
Gender						
Male	43 (28.5)	20 (32.3)	18 (23.4)	8 (7.5)	80 (65.0)	170 (32.4)
Female	108 (71.5)	42 (67.7)	59 (76.6)	99 (92.5)	43 (35.0)	355 (67.6)
Year of study						
Year 1	56 (36.8)	26 (41.9)	17 (22.1)	52 (48.6)	39 (31.7)	192 (36.5)
Year 2	56 (36.8)	18 (29.0)	11 (14.3)	29 (27.1)	35 (28.5)	149 (28.3)
Year 3	36 (23.7)	11 (17.8)	15 (19.5)	26 (24.3)	33 (26.8)	124 (23.6)
Years 4/5	4 (2.7)	7 (11.3)	34 (44.1)	0	16 (13.0)	61 (11.6)
Ethnicity						
White	137 (90.1)	47 (78.3)	19 (24.7)	86 (80.4)	61 (50.0)	353 (67.5)
Black	1 (0.7)	1 (1.7)	3 (3.9)	3 (2.8)	8 (6.6)	16 (3.1)
Asian	9 (5.9)	11 (18.3)	50 (64.9)	13 (12.1)	45 (36.8)	130 (24.9)
Other	5 (3.3)	1 (1.7)	5 (6.5)	5 (4.7)	8 (6.6)	24 (4.5)
Religious belief						
Christian	53 (34.9)	18 (29.1)	10 (13.0)	36 (33.6)	36 (29.3)	156 (29.7)
Hindu	0	4 (6.5)	14 (18.2)	3 (2.8)	8 (6.5)	29 (5.5)
Muslim	3 (2.0)	1 (1.6)	13 (16.9)	5 (4.7)	16 (13.0)	38 (7.2)
Sikh	2 (1.3)	1 (1.6)	14 (18.2)	2 (1.9)	6 (4.9)	26 (4.9)
Agnostic	40 (26.3)	3 (4.8)	9 (11.7)	17 (15.9)	9 (7.3)	78 (14.8)
Atheist	31 (20.4)	15 (24.2)	6 (7.7)	19 (17.7)	15 (12.2)	86 (16.4)
Other	16 (10.5)	5 (8.0)	7 (9.1)	9 (8.4)	14 (11.4)	51 (9.7)
None	7 (4.6)	15 (24.2)	4 (5.2)	16 (15.0)	19 (15.4)	62 (11.8)

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Table 1 continued

College	Arts and Law	Social Sciences	Medical and Dental Sciences	Life and Environmental Sciences	Engineering and Physical Sciences	Total
Non-respondents						
n	130 (46.1)	320 (83.8)	378 (83.1)	403 (79.0)	609 (83.2)	1,835 (77.7)
Mean age	18.9	19.7	20.8	19.7	20.7	20.0
Gender						
Male	84 (64.1)	192 (60.0)	153 (40.5)	46 (11.4)	477 (77.9)	952 (51.6)
Female	47 (35.9)	128 (40.0)	225 (59.5)	357 (88.6)	135 (22.1)	892 (48.4)
Ethnicity						
White	126 (96.9)	118 (36.9)	83 (22.0)	309 (76.7)	148 (24.3)	784 (42.6)
Black	0	19 (5.9)	7 (1.9)	9 (2.2)	66 (10.8)	101 (5.5)
Asian	0	112 (35.0)	258 (68.3)	55 (13.6)	130 (21.3)	555 (30.2)
Other	0	8 (2.5)	14 (3.7)	13 (3.2)	9 (1.5)	44 (2.4)

Values are number (per cent within college) unless otherwise indicated

Asian includes Indian, Pakistani, Bangladeshi, Chinese and Asian Other

Numbers vary slightly due to missing data for some variables

Non-respondents ethnicity data were incomplete

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Table 2 Responses to Spirituality Scale ($n = 517$)

Statement	Disagree/strongly disagree	Neutral	Agree/strongly agree
I am a very spiritual person	39.1 % (202)	27.8 % (144)	33.1 % (171)
I try to be a spiritual person	35.8 % (185)	19.7 % (102)	44.5 % (230)*
My spiritual beliefs help me to be a better person	32.5 % (168)	17.8 % (92)	49.7 % (257)***
My spirituality is at the core of who I am	48.6 % (251)***	22.4 % (116)	29.0 % (150)
My spirituality is my inner voice speaking to me	50.9 % (263)***	21.8 % (113)	27.3 % (141)
I believe god, creator or higher power is present in my life	36.8 % (190)	17.4 % (90)	45.8 % (237)*
My spirituality is my personal connection with god or a higher power	46.0 % (238)**	19.0 % (98)	35.0 % (181)
My spiritual beliefs are the foundation for my religious background	48.4 % (250)***	19.1 % (99)	32.5 % (168)
My spiritual beliefs make my life more meaningful	36.2 % (187)	19.5 % (101)	44.3 % (229)*
I feel as if my life has a higher purpose	35.2 % (182)	23.2 % (120)	41.6 % (215)
My spiritual beliefs guide my relationships with other people	45.7 % (236)***	23.4 % (121)	30.9 % (160)
I would feel lost without my spiritual beliefs directing my life	51.6 % (267)***	20.7 % (107)	27.7 % (143)
My spiritual beliefs positively impact my health and well-being	37.3 % (193)	23.4 % (121)	39.3 % (203)

* $p < .05$; ** $p < .01$; *** $p < .001$

elements of spirituality are playing some part in the lives of students, for example, in terms of helping them to be 'a better person' and imparting more meaning in life.

The mean total spirituality score was 37.3 (SD = 14.6, range 13–65, $n = 517$, coefficient of skewness = −.053, standard error = .117). Total health score was negatively skewed (coefficient of skewness = −.757, standard error = .114) with a median score of 31 (IQR = 7, range 15–36, $n = 460$) as was total life satisfaction score (coefficient of skewness = −.731, standard error = .109) with a median score of 43 (IQR = 10, range 13–56, $n = 505$).

A t test revealed that students who drank alcohol had lower levels of spirituality ($M = 34.4$; SD = 13.7) than those who did not ($M = 45.7$; SD = 14.1), $t(515) = -8.23$, $p < .0001$. In addition, a Spearman's correlation revealed that alcohol consumption was significantly negatively correlated with total spirituality score ($r = -.313$, $p < .0001$, $n = 379$). There were no significant differences in total spirituality scores between male and female students, students who were part of an extracurricular group activity and those who were not and students who smoked compared with those who did not.

In order to investigate differences in levels of spirituality across the demographic variables, a one-way ANOVA was performed with total spirituality score as the dependent

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Table 3 Comparison of total spirituality scores across a set of demographic variables

Variables	*M*	SD	*n*
Marital status			
Single	38.8	14.8	328
In a relationship	33.9	13.7	178
Married	51.7	17.4	7
Divorced	39.5	6.4	2
College			
Arts and Law	36.0	13.8	150
Social Sciences	35.4	11.9	60
Medical and Dental Sciences	44.4	15.3	75
Life and Environmental Sciences	33.7	14.2	106
Engineering and Physical Sciences	38.6	15.2	121
Ethnicity			
White	33.1	13.5	345
Indian	46.1	13.8	70
Pakistani	52.7	8.8	17
Chinese	36.1	12.3	28
Black	52.9	7.8	16
Other	46.6	12.6	38
Religious belief			
Christian	44.7	12.2	153
Hindu	45.8	11.7	29
Muslim	51.9	9.6	38
Sikh	51.6	8.0	25
Agnostic	30.5	9.4	76
Atheist	22.2	9.2	85
Other	38.3	11.4	50
None	28.6	11.2	61

variable. Table 3 displays the means and standard deviations. There was a statistically significant difference in mean total spirituality score between students from the five colleges, $F(4,507) = 7.15$, $p < .0001$ ($\eta^2 = .05$). Hochberg's GT2 post hoc test revealed that Dentistry students had significantly higher spirituality ($M = 44.4$; SD $= 15.3$) than Arts and Law students, Social Sciences students and Psychology students ($p < .05$). Spirituality score was significantly different between students of different ethnicities, $F(5,508) = 26.50, p < .0001$ ($\eta^2 = .21$). White students had the lowest spirituality ($M = 33.1$; SD $= 13.4$), and Hochberg's GT2 test indicated that this was significantly different from Black students ($p < .05$), who had the highest spirituality ($M = 52.9$; SD $= 7.8$). Pakistani students had a similar high level of spirituality ($M = 52.7$; SD $= 8.8$), but these results must be read with caution because of the differences in numbers between the ethnic groups (see Table 3). Lastly, there were also significant differences in spirituality between different religious groups, $F(7,509) = 63.52$, $p < .0001$ ($\eta^2 = .47$). Muslim students had the highest level of spirituality ($M = 51.9$; SD $= 9.6$), and Hochberg's GT2 test revealed that this was significantly different from all other students ($p < .05$) except for Sikhs and Hindus who had the second and third highest spirituality scores, respectively. Mean total spirituality scores were also

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significantly different for students of different marital status but not significantly different for students in different years, with different levels of general health or with different numbers of days that their health was not good.

After controlling for mean total health score and life satisfaction score using ANCOVA, all the significant differences in mean total spirituality score were still present. Had Bonferroni corrections been applied to the ANOVAs and ANCOVAs, all but one of the results would have remained statistically significant. Only differences in spirituality between students of different marital status would not have remained significant, suggesting that this may be a chance finding.

The study was designed to identify whether there was a reported relationship between spirituality, health and life satisfaction of undergraduates. Spearman's correlation analysis revealed weak correlations between total spirituality score and health score ($r = -.051$, $p = .252$, $n = 501$) and between total spirituality score and life satisfaction score ($r = .019$, $p = .681$, $n = 496$). The health score was divided into two groups; participants with a score of 31 (the median value) and above were classified as having high health score and those below 31 as having low health score. Binary logistic regression using the forward stepwise method showed that total spirituality score was not a significant predictor ($p = .282$) of health score. The model, which included total life satisfaction score, accounted for 23.9 % of variance (Nagelkerke $R^2 = .239$) and correctly classified 69 % of participants as having high or low health score using a cut-off value of .5.

Total spirituality score was also not a significant predictor ($p = .371$) of life satisfaction score in the multiple linear regression analysis using the forward method. The model, which included total health score, predicted 31.1 % of the variance in life satisfaction ($R^2 = .311$). For both regression analyses, the following factors were considered as potential covariates but were not all selected by the regression process: age, gender, year of study, course, college, ethnicity, religious belief, marital status, member of a religious/spiritual group, part of extracurricular group, do you smoke, smoking consumption, do you drink alcohol and alcohol consumption. Including the students who had a chronic medical condition did not alter the results and neither did missing value substitution.

Discussion

This is the first study to report on student spirituality in the UK. The data did not reveal a significant relationship between undergraduates' spirituality, health and life satisfaction. This is contrary to most previous research. Although a US study did show a significant positive relationship between spirituality and health, a convenience sample of students was used, selected from only one course (Nelms 2005). Conversely, this present study had a large sample of undergraduates representing students from across the university. Furthermore, the majority of students rated their health as 'good' or 'very good' over the past month and over 75 % reported as being 'satisfied', 'pleased' or 'delighted' with their overall life. Therefore, the little variation present may not have been enough to elicit significant relationships. This was also true for a similar study in the USA (Nagel and Sgoutas-Emch 2007).

However, many students view spirituality in a positive light and consider it an important issue, for example, by adding meaning to their lives. The fact that a third of students reported being very spiritual but nearly half reported trying to be spiritual implies a certain desire for spirituality, perhaps as something they would wish to explore or as a worthy aspiration. It could be argued that this is sufficient evidence to encourage universities to

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incorporate spirituality more into campus life. A US longitudinal study by the Higher Education Research Institute has demonstrated that university can enhance students' academic skills by providing more opportunities to connect with their inner lives, for example, by meditation and self-reflection (Astin et al. 2011).

Students who do not drink alcohol had higher levels of spirituality than those who do, and as alcohol consumption increases, students' level of spirituality decreases. This is consistent with previous literature (Nelms 2005; Nagel and Sgoutas-Emch 2007). As spirituality is related to religion (Miller and Thoresen 2003) and some religions prohibit or discourage the consumption of alcohol, this is perhaps not a surprise finding. On the other hand, smoking did not correlate with spirituality level. As with the case for a previous study, the low rates of smoking in this sample probably explain this finding (Nagel and Sgoutas-Emch 2007).

Dentistry students had the highest level of spirituality. This can be explained by the fact that over 50 % of Dentistry students were Muslim, Sikh or Hindu, and students of these faiths had the highest levels of spirituality amongst the religions. It is interesting to note that for reasons that are uncertain, Psychology students from the College of Life and Environmental Sciences had the lowest level of spirituality. Amongst the ethnicities, Black students had the highest spirituality and White students had the lowest. This is in line with US literature where African American students have been shown to have higher levels of spirituality compared with White students (Nelms 2005). As White students were over-represented amongst the respondents and had the lowest spirituality, this could explain the relatively low mean total spirituality score.

Response bias could have occurred in favour of students who were more spiritual. However, if this was the case, the courses with the highest response rates would have had a greater spirituality score. Response rates between courses varied from 6 to 61 %, and there was no relationship between course response rate and spirituality score. Therefore, it is likely that response bias did not occur; it may have been eliminated by the attractive prizes offered in the prize draw.

This study has several limitations. The brief 13-item Spirituality Scale used may not have incorporated everyone's understanding of spirituality. Indeed, as the scale was taken from a US study, the questions may not be entirely generalisable to a UK population. For example, most of the questions are framed from a religious perspective and are positively phrased. A mixed-methods approach may be required to fully appreciate different perceptions of spirituality.

Although the study's response rate appears to be low (23 %), a national survey of first-year students that compared response rates by mode of administration revealed that the online survey method achieved the lowest response rate at 17.1 % (Sax et al. 2003). Despite respondents and non-respondents differing slightly in terms of gender, indicating a possible lack of generalisability to the male population, they were similar in terms of mean age. Furthermore, the percentage of respondents who belonged to a religion (57 %) was exactly the same as that of the British public in 2008, as quoted by the recent British Social Attitudes Survey (National Centre for Social Research 2010).

The use of self-reported measures of health is a limitation of the study, but it would have been impractical, time consuming and potentially unethical to obtain objective records. It could also be argued that a personal perception of one's health is just as important if not more important than one's actual physical health. Lastly, as with all cross-sectional studies, any relationships observed cannot be considered causal.

There is a need for further research in the area of students' spirituality and health. Multicentre longitudinal studies should be undertaken to ascertain causal relationships as

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to whether or not including spirituality into one's life as a young adult has beneficial health and life satisfaction outcomes in the future. This research could lead to health promotion strategies in a university setting by embedding elements of spirituality that are protective to health.

Further research may also inform general practitioners in the UK of the potential influence of spirituality on students' health and well-being. In terms of patient care, the General Medical Council has recognised that in the diagnosis and management of patients, doctors should appreciate the importance of spiritual factors (General Medical Council 2009) and as far as NICE are concerned, we should ensure 'that spiritual elements of illness are taken into account' (NICE Guidance 2004).

This initial study has identified a desire for spirituality amongst UK undergraduate students. There is an indication that universities have a role to play in supporting students' search for meaning and purpose as they prepare themselves for the challenges ahead. This could be achieved by offering impartial workshops as an opportunity to discuss existential topics, including spirituality in issues to do with student support and welfare and increasing the awareness of faith societies on campus.

References

Astin, A. W., Astin, H. S., & Lindholm, J. A. (2011). *Cultivating the spirit: How college can enhance students' inner lives*. San Francisco: Jossey-Bass.

Cavendish, R., Luise, B. K., Bauer, M., Gallo, M. A., Horne, K., & Medefindt, J. (2001). Recognizing opportunities for spiritual enhancement in young adults. *Nursing Diagnosis, 12*, 77–92.

Clark, P. A., Drain, M., & Malone, M. P. (2003). Addressing patients' emotional and spiritual needs. *Joint Commission Journal on Quality and Safety, 29*(12), 659–670.

Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99–125.

Fabricatore, A. N., Handal, P. J., & Fenzel, L. M. (2000). Personal spirituality as a moderator of the relationship between stressors and subjective well-being. *Journal of Psychology and Theology, 28*, 221–228.

Fleming, S., & Evans, D. S. (2008). The concept of spirituality: Its role within health promotion practice in the Republic of Ireland. *Spirituality and Health International, 9*(2), 79–89.

Frisch, M. (2006). *Quality of life therapy: Applying a life satisfaction approach to positive psychology and cognitive therapy*. Hoboken, NJ: Wiley.

General Medical Council. (2009). *Tomorrow's doctors*. Available: http://www.gmc-uk.org/. Accessed 10 Jan 2010.

Grant, L., Murray, S. A., & Sheikh, A. (2010). Spiritual dimensions of dying in pluralist societies. *British Medical Journal, 341*, c4859.

Hay, D., & Hunt, K. (2000). *Understanding the spirituality of people who don't go to church*. Available: http://www.spiritualjourneys.org.uk. Accessed 20 Oct 2009.

King, M. B. (2009). Conceptualising spirituality for medical research and health service provision. *BMC Health Services Research, 116*, 1472–6963.

Koenig, H. G., McCullough, M. E., & Larson, D. B. (2001). *Handbook of religion and health*. Oxford: Oxford University Press.

Larson, D. B., Swyers, J. P., & McCullough, M. E. (1998). *Scientific research on spirituality and health: A report based on the scientific progress in spirituality conferences*. Bethesda, MD: National Institute for Healthcare Research.

Lawler-Row, K. A., & Elliott, J. (2009). The role of religious activity and spirituality in the health and well-being of older adults. *Journal of Health Psychology, 14*, 43–52.

Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health—an emerging research field. *American Psychologist, 58*, 24–35.

Nagel, E., & Sgoutas-Emch, S. (2007). The relationship between spirituality, health beliefs, and health behaviours in college students. *Journal of Religion and Health, 46*(1), 141–154.

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National Centre for Social Research. (2010). *British social attitudes survey*. The 26th report. Available: http://www.natcen.ac.uk. Accessed 23 May 2010.

Nelms, L. W. (2005). The relationship between spirituality and the health of college students in a university setting. Electronic dissertation, the University of Tennessee.

NICE Guidance. (2004). *Improving supportive and palliative care for adults with cancer*. Available: Http://guidance.nice.org.uk/CSGSP. Accessed 15 Oct 2009.

O'Connell, K. A., & Skevington, S. M. (2010). Spiritual, religious, and personal beliefs are important and distinctive to assessing quality of life in health: A comparison of theoretical models. *British Journal of Health Psychology, 15*(4), 729–748.

Office for National Statistics. (2009). *2009 rehearsal questionnaire for England, 2011 census*. Available: http://www.statistics.gov.uk. Accessed 30 Oct 2009.

Piedmont, L. R., Hassinger, C. J., Rhorer, J., Sherman, M. F., Sherman, N. C., & Williams, J. E. G. (2007). The relations among spirituality and religiosity and axis II functioning in two college samples. *Research in the Social Scientific Study of Religion, 18*(7), 54–73.

Sax, L. J., Gilmartin, S. K., & Bryant, A. N. (2003). Assessing response rates and nonresponse bias in web and paper surveys. *Research in Higher Education, 44*, 409–432.

Seybold, K. S., & Hill, P. C. (2001). The role of religion and spirituality in mental and physical health. *Current Directions in Psychological Science, 10*, 21–24.

Taylor, S. E. (2008). *Health psychology* (7th ed.). Boston: McGraw-Hill.

Webber, R. (2001). Young people and their quest for meaning. *Youth Studies Australia, 21*(1), 40–43.

Zullig, K. J. (2005). Using CDC's health-related quality of life scale on a college campus. *American Journal of Health Behaviour, 29*, 569–578.

Zullig, K. J., Huebner, E. S., Patton, J. M., & Murray, K. A. (2009). The brief multidimensional students' life satisfaction scale—college version. *American Journal of Health Behaviour, 33*, 483–493.

Zullig, K. J., Ward, R. M., & Horn, T. (2006). The association between perceived spirituality, religiosity, and life satisfaction: The mediating role of self-rated health. *Social Indicators Research, 79*, 255–274.